SPEC® CFP2006 Result
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Dell Inc.

$SPECfp^®\_rate2006 = \qquad 142$

PowerEdge R810 (Intel Xeon E7520, 1.87 GHz)

$SPECfp\_rate\_base2006 = \quad 135$
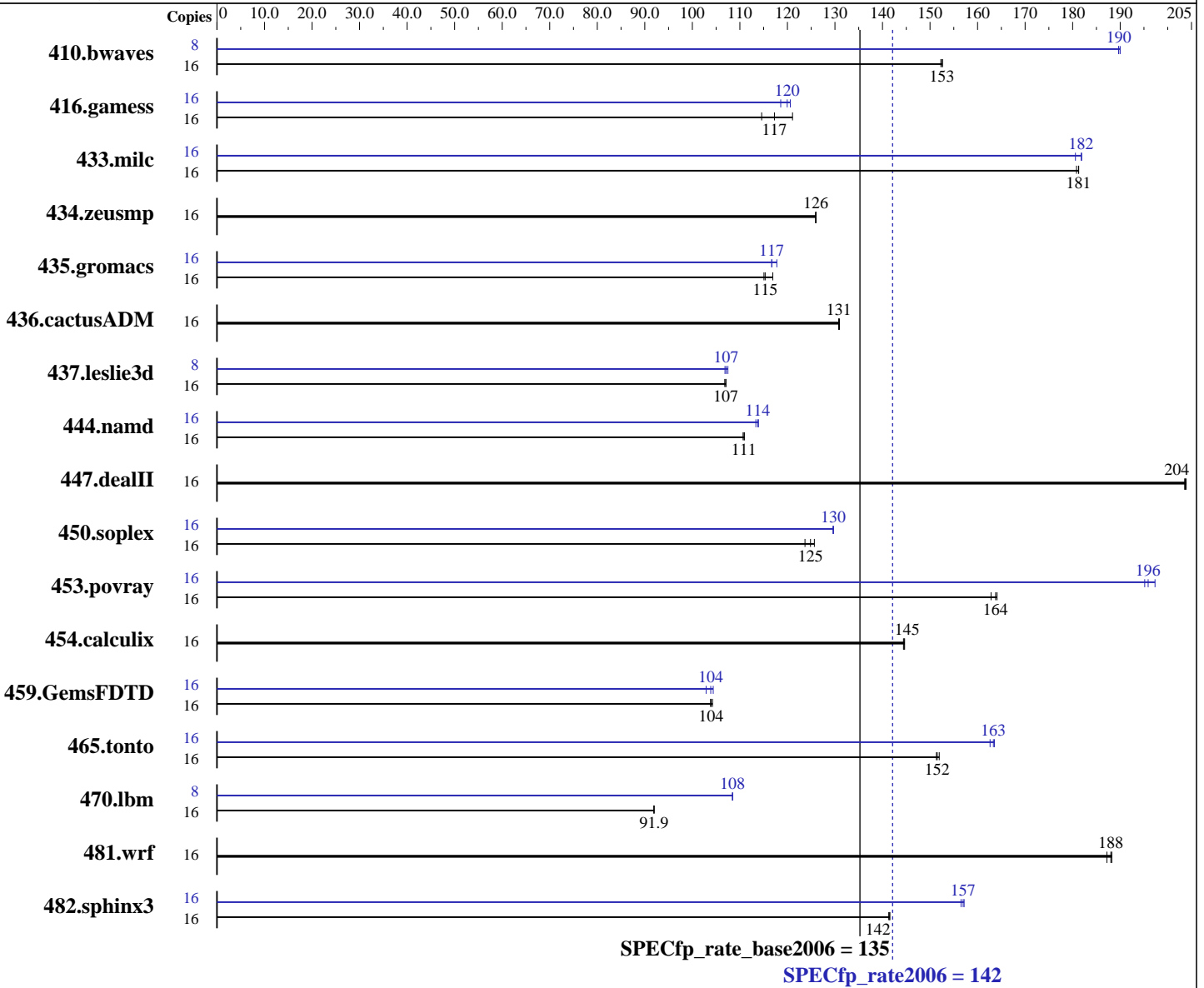
CPU2006 license: 55
Test sponsor: Dell Inc.
Tested by: Dell Inc.

Test date: May-2010
Hardware Availability: Mar-2010
Software Availability: Dec-2009

Benchmark	Copies	Result
410.bwaves	8	190
	16	153
416.gamess	16	120
	16	117
433.milc	16	182
	16	181
434.zeusmp	16	126
435.gromacs	16	117
	16	115
436.cactusADM	16	131
437.leslie3d	8	107
	16	107
444.namd	16	114
	16	111
447.dealII	16	204
450.soplex	16	130
	16	125
453.povray	16	196
	16	164
454.calculix	16	145
459.GemsFDTD	16	104
	16	104
465.tonto	16	163
	16	152
470.lbm	8	108
	16	91.9
481.wrf	16	188
482.sphinx3	16	157
	16	142

SPECfp_rate_base2006 = 135

SPECfp_rate2006 = 142

Hardware

CPU Name:	Intel Xeon E7520
CPU Characteristics:	
CPU MHz:	1867
FPU:	Integrated
CPU(s) enabled:	8 cores, 2 chips, 4 cores/chip, 2 threads/core
CPU(s) orderable:	2,4 chips
Primary Cache:	32 KB I + 32 KB D on chip per core
Secondary Cache:	256 KB I+D on chip per core

Continued on next page

Software

Operating System:	SUSE Linux Enterprise Server 11 (x86_64), Kernel 2.6.27.19-5-smp
Compiler:	Intel C++ and Fortran Professional Compiler for IA32 and Intel 64, Version 11.1 Build 20091130 Package ID: l_cproc_p_11.1.064, l_cprof_p_11.1.064
Auto Parallel:	No
File System:	ext3
System State:	Run level 3 (multi-user)

Continued on next page

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L3 Cache:	18 MB I+D on chip per chip	Base Pointers:	64-bit
Other Cache:	None	Peak Pointers:	32/64-bit
Memory:	256 GB (32 x 8 GB DDR3-1066 QR RDIMM, CL7, ECC, downclocked to 800 MHz)	Other Software:	None
Disk Subsystem:	1 x 146 GB 15000 RPM SAS		
Other Hardware:	None		

Results Table

	Base						Peak					
Benchmark	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Copies**	**Seconds**	**Ratio**	**Seconds**	**Ratio**	**Seconds**	**Ratio**
410.bwaves	16	1425	153	**1426**	**153**	1428	152	8	572	190	573	190	**573**	**190**
416.gamess	16	2734	115	**2671**	**117**	2587	121	16	2642	119	**2612**	**120**	2597	121
433.milc	16	**810**	**181**	810	181	812	181	16	807	182	**808**	**182**	813	181
434.zeusmp	16	1155	126	**1155**	**126**	1156	126	16	1155	126	**1155**	**126**	1156	126
435.gromacs	16	977	117	993	115	**991**	**115**	16	970	118	**979**	**117**	979	117
436.cactusADM	16	1460	131	**1462**	**131**	1462	131	16	1460	131	**1462**	**131**	1462	131
437.leslie3d	16	**1405**	**107**	1408	107	1405	107	8	700	107	704	107	**702**	**107**
444.namd	16	1157	111	1159	111	**1157**	**111**	16	1127	114	**1128**	**114**	1132	113
447.dealII	16	**899**	**204**	899	204	898	204	16	**899**	**204**	899	204	898	204
450.soplex	16	1062	126	1079	124	**1069**	**125**	16	1030	130	1029	130	**1029**	**130**
453.povray	16	**520**	**164**	523	163	519	164	16	431	197	436	195	**435**	**196**
454.calculix	16	912	145	**913**	**145**	914	144	16	912	145	**913**	**145**	914	144
459.GemsFDTD	16	1635	104	**1633**	**104**	1628	104	16	1626	104	**1634**	**104**	1650	103
465.tonto	16	**1039**	**152**	1036	152	1040	151	16	963	164	**964**	**163**	968	163
470.lbm	16	2392	91.9	**2391**	**91.9**	2390	92.0	8	**1013**	**108**	1014	108	1013	108
481.wrf	16	949	188	955	187	**950**	**188**	16	949	188	955	187	**950**	**188**
482.sphinx3	16	2207	141	2203	142	**2204**	**142**	16	1984	157	**1987**	**157**	1992	157

Results appear in the order in which they were run. Bold underlined text indicates a median measurement.

Submit Notes

```
    The config file option 'submit' was used.
     numactl was used to bind copies to the cores
```

Operating System Notes

```
    'ulimit -s unlimited' was used to set the stacksize to unlimited prior to run
```

Platform Notes

```
    vm.zone_reclaim_mode = 1 in /etc/sysctl.conf file
    BIOS Settings:
    Power Management = Maximum Performance (Default = Active Power Controller)
```

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General Notes

Binaries were compiled on SLES 10 with Binutils 2.18.50.0.7.20080502

Base Compiler Invocation

C benchmarks:
    icc   -m64

C++ benchmarks:
    icpc   -m64

Fortran benchmarks:
    ifort -m64

Benchmarks using both Fortran and C:
    icc   -m64 ifort -m64

Base Portability Flags

        410.bwaves: -DSPEC_CPU_LP64
        416.gamess: -DSPEC_CPU_LP64
          433.milc: -DSPEC_CPU_LP64
        434.zeusmp: -DSPEC_CPU_LP64
       435.gromacs: -DSPEC_CPU_LP64 -nofor_main
      436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
       437.leslie3d: -DSPEC_CPU_LP64
          444.namd: -DSPEC_CPU_LP64
        447.dealII: -DSPEC_CPU_LP64
         450.soplex: -DSPEC_CPU_LP64
         453.povray: -DSPEC_CPU_LP64
        454.calculix: -DSPEC_CPU_LP64 -nofor_main
      459.GemsFDTD: -DSPEC_CPU_LP64
          465.tonto: -DSPEC_CPU_LP64
           470.lbm: -DSPEC_CPU_LP64
           481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
        482.sphinx3: -DSPEC_CPU_LP64

Base Optimization Flags

C benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

C++ benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

Fortran benchmarks:
    -xSSE4.2 -ipo -O3 -no-prec-div -static

Continued on next page

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Test sponsor:	Dell Inc.	**Hardware Availability:**	Mar-2010
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Base Optimization Flags (Continued)

Benchmarks using both Fortran and C:
```
-xSSE4.2 -ipo -O3 -no-prec-div -static
```

Peak Compiler Invocation

C benchmarks (except as noted below):
```
icc   -m64
```

```
482.sphinx3: icc -m32
```

C++ benchmarks (except as noted below):
```
icpc  -m64
```

```
450.soplex: icpc -m32
```

Fortran benchmarks:
```
ifort -m64
```

Benchmarks using both Fortran and C:
```
icc   -m64 ifort -m64
```

Peak Portability Flags

```
    410.bwaves: -DSPEC_CPU_LP64
    416.gamess: -DSPEC_CPU_LP64
      433.milc: -DSPEC_CPU_LP64
    434.zeusmp: -DSPEC_CPU_LP64
   435.gromacs: -DSPEC_CPU_LP64 -nofor_main
  436.cactusADM: -DSPEC_CPU_LP64 -nofor_main
    437.leslie3d: -DSPEC_CPU_LP64
      444.namd: -DSPEC_CPU_LP64
     447.dealII: -DSPEC_CPU_LP64
    453.povray: -DSPEC_CPU_LP64
   454.calculix: -DSPEC_CPU_LP64 -nofor_main
  459.GemsFDTD: -DSPEC_CPU_LP64
      465.tonto: -DSPEC_CPU_LP64
       470.lbm: -DSPEC_CPU_LP64
       481.wrf: -DSPEC_CPU_LP64 -DSPEC_CPU_CASE_FLAG -DSPEC_CPU_LINUX
```

Peak Optimization Flags

C benchmarks:

Continued on next page

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Peak Optimization Flags (Continued)

  433.milc: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-fno-alias -opt-prefetch`

  470.lbm: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-opt-malloc-options=3 -ansi-alias -auto-ilp32`

  482.sphinx3: `-xSSE4.2 -ipo -O3 -no-prec-div -static -unroll2`

C++ benchmarks:

  444.namd: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-fno-alias -auto-ilp32`

  447.dealII: `basepeak = yes`

  450.soplex: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-opt-malloc-options=3`

  453.povray: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-unroll4 -ansi-alias`

Fortran benchmarks:

  410.bwaves: `-xSSE4.2 -ipo -O3 -no-prec-div -static -opt-prefetch`

  416.gamess: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-unroll2 -Ob0 -ansi-alias -scalar-rep-`

  434.zeusmp: `basepeak = yes`

  437.leslie3d: `-xSSE4.2 -ipo -O3 -no-prec-div -static`

  459.GemsFDTD: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-unroll2 -Ob0`

  465.tonto: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-unroll4 -auto -inline-calloc -opt-malloc-options=3`

Benchmarks using both Fortran and C:

  435.gromacs: `-xSSE4.2`(pass 2) `-prof-gen`(pass 1) `-ipo`(pass 2) `-O3`(pass 2)
  `-no-prec-div`(pass 2) `-static`(pass 2) `-prof-use`(pass 2)
  `-opt-prefetch -auto-ilp32`

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Peak Optimization Flags (Continued)

436.cactusADM: basepeak = yes

454.calculix: basepeak = yes

481.wrf: basepeak = yes

The flags file that was used to format this result can be browsed at
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.html

You can also download the XML flags source by saving the following link:
http://www.spec.org/cpu2006/flags/Intel-ic11.1-linux64-revE.20100330.xml

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